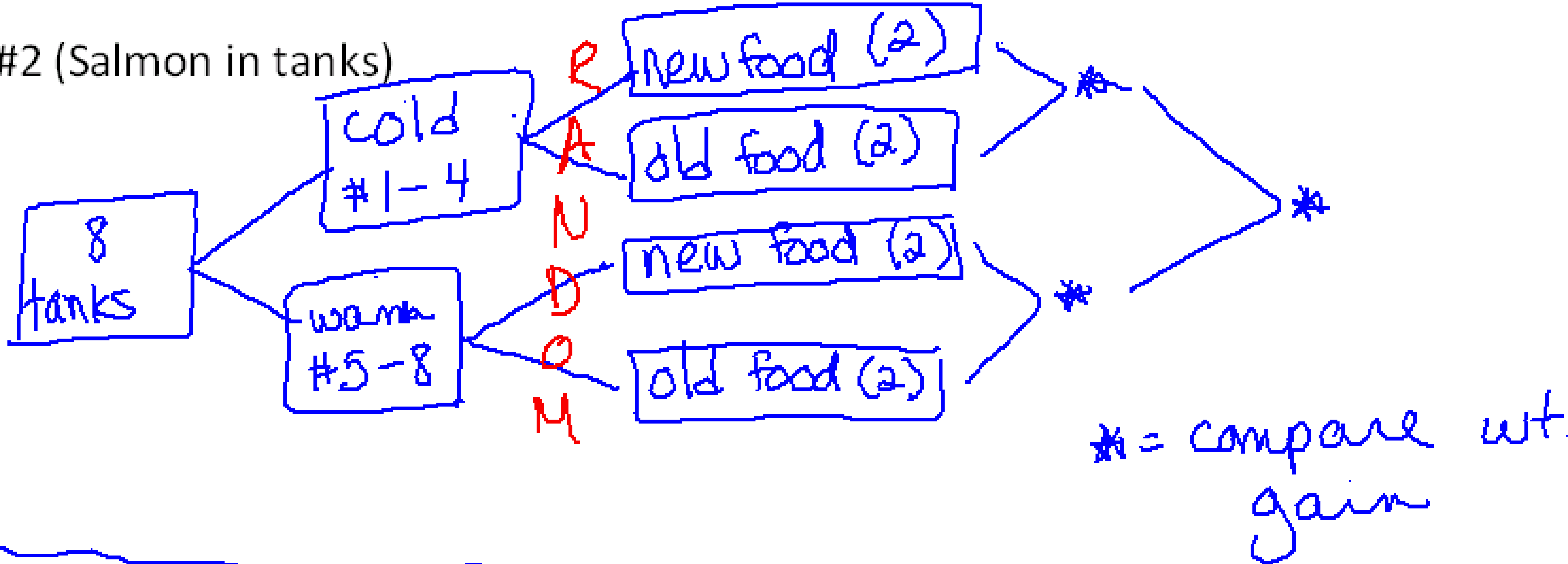
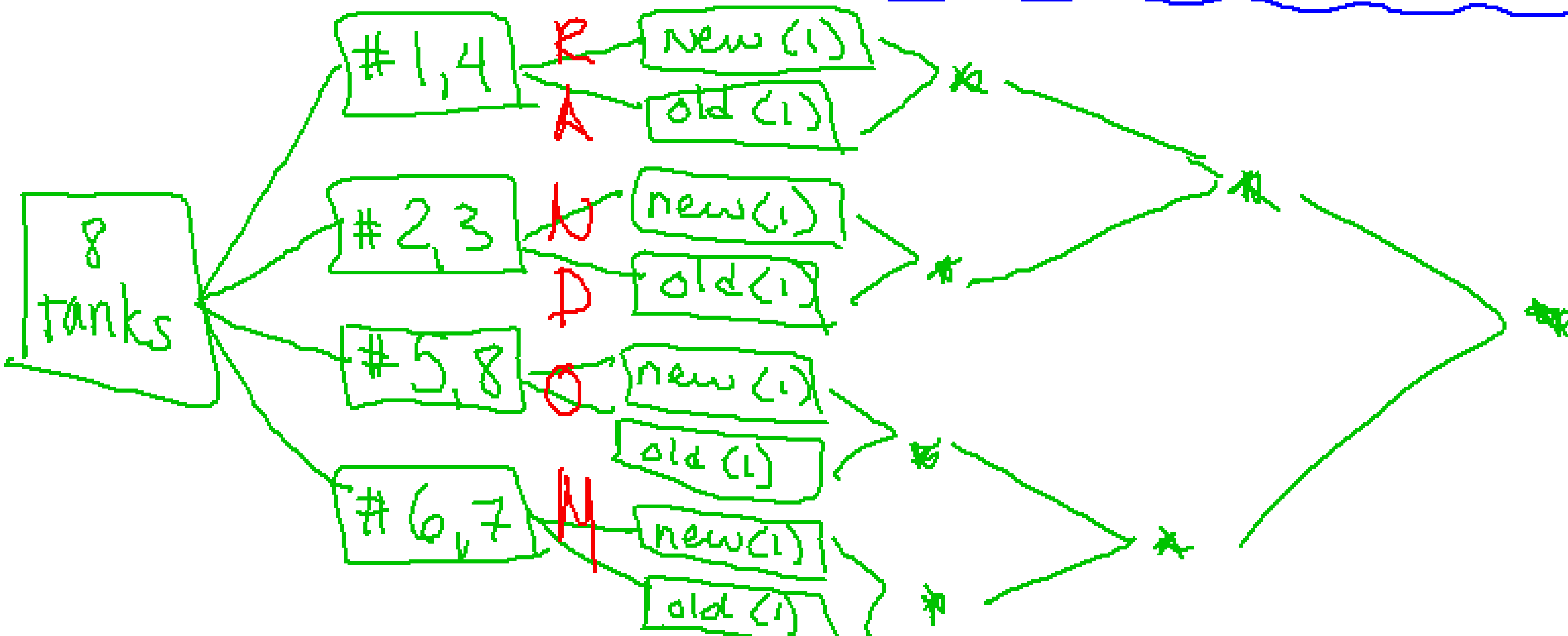
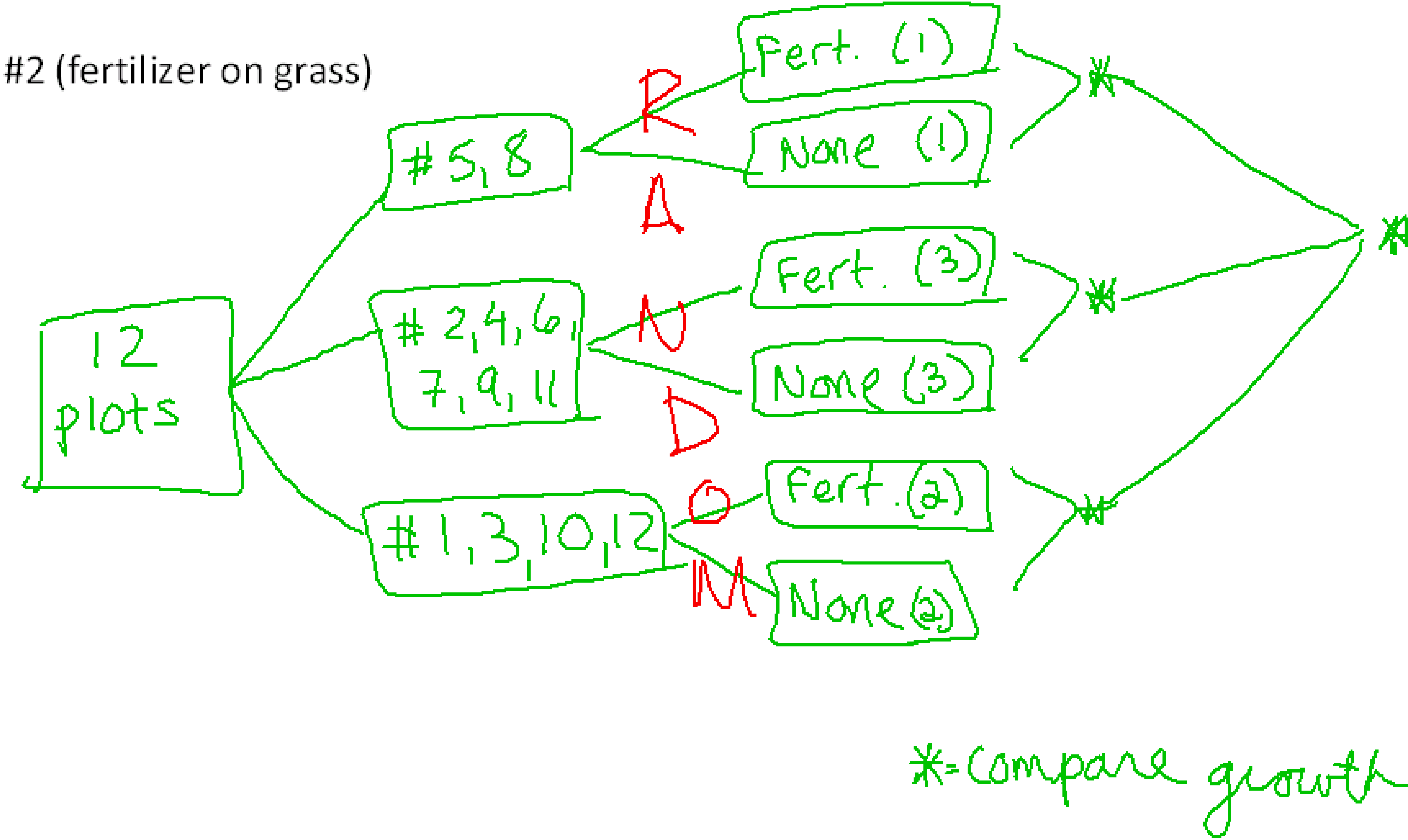
#2 (Salmon in tanks)



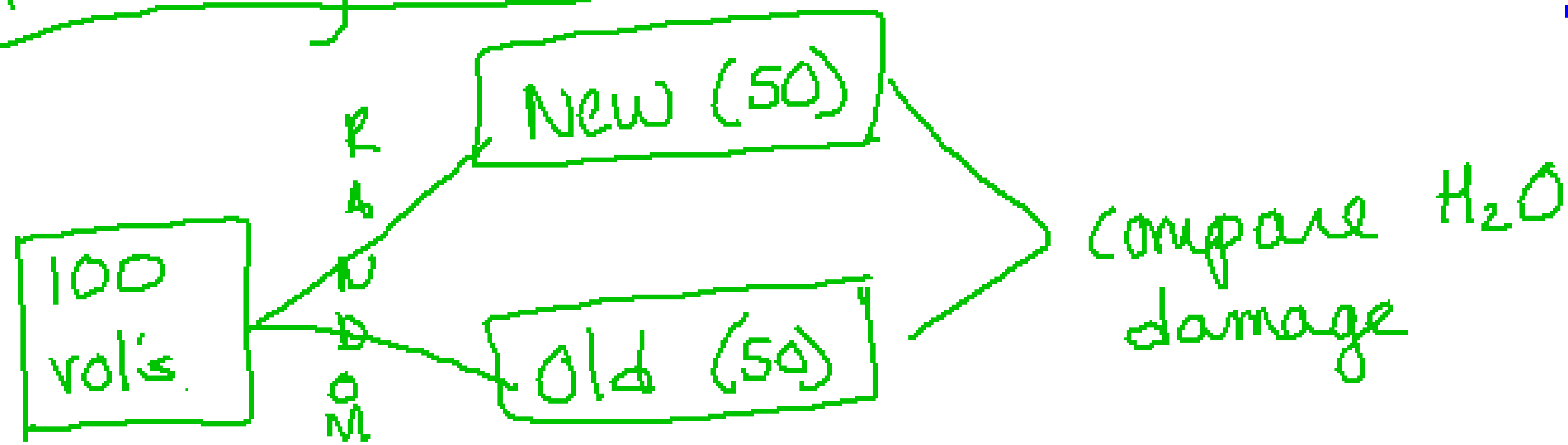


#2 (fertilizer on grass)



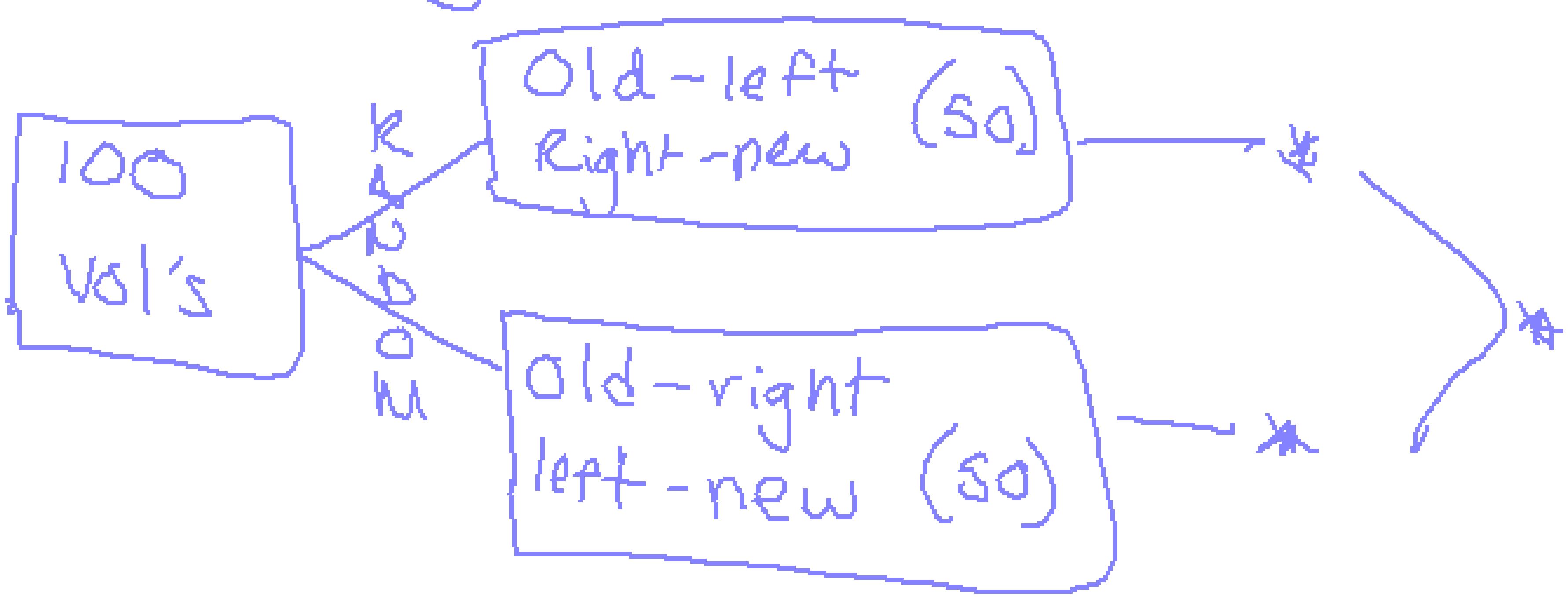
AP 2002 #2

Partially correct:



* you could block, too. Still Partial

Essentially correct:



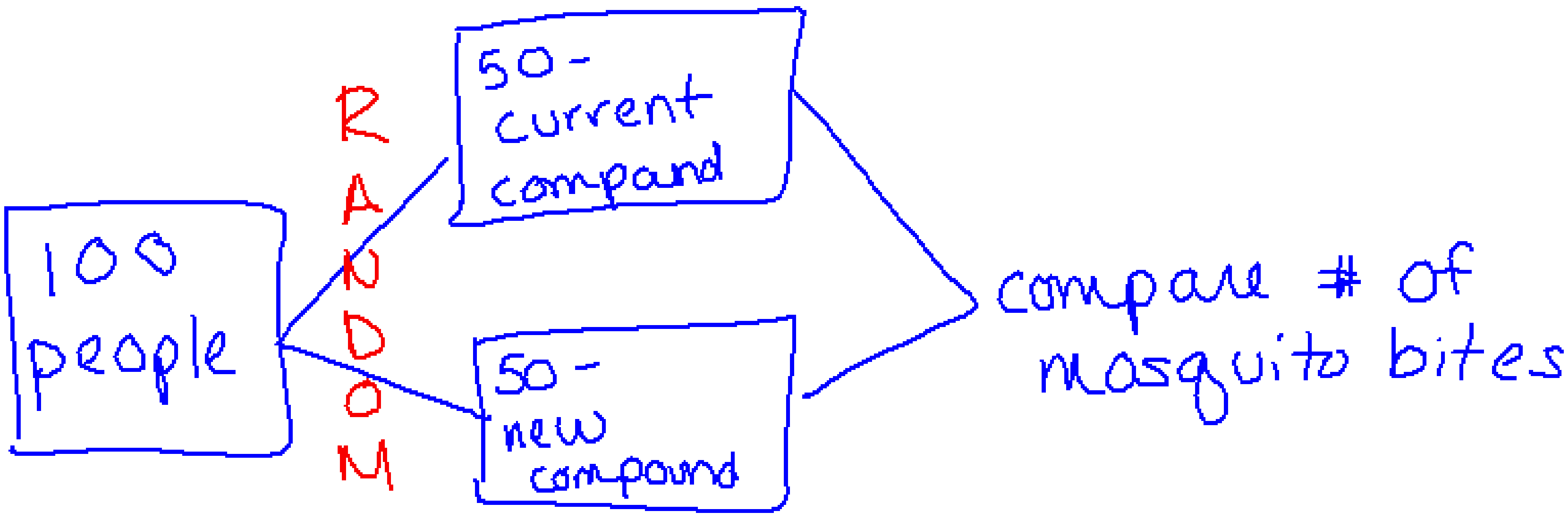
* = compare H_2O damage

part (b)

yes, this could be double blind as long as both the subjects and the experimenters that are handing out and evaluating the boots don't know which boot has which treatment on it.

AP 2005 #3

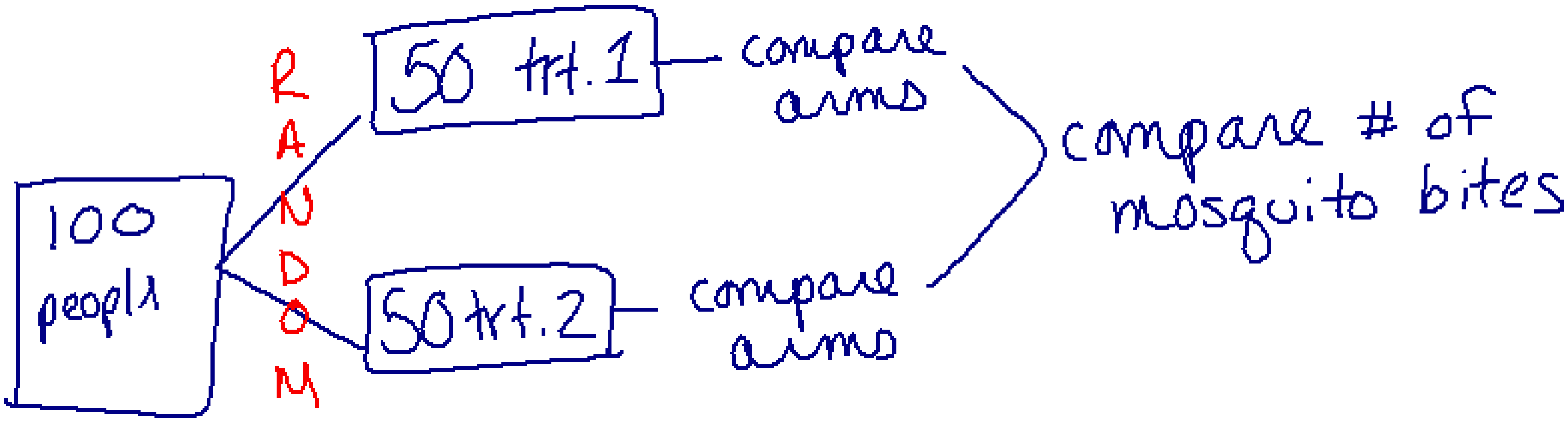
Part (a): CRD and randomization



Randomization:

Take the 100 people, assign each a #, then use software (calculator) or Table of Random Digits to randomly assign each person to Treatment 1 (current compound) or treatment 2 (new compound), so that there are 50 people in each treatment.

Part (b): Matched Pairs design and randomization



trt. 1 = Left - new
Right - current

trt. 2 = Left - current
Right - new

* put both arms in bin @ same time

Randomization:

Take the 100 people, assign each a #, then use software (calculator) or Table of Random Digits to randomly assign each person to Treatment 1 or Treatment 2, so that there are 50 people in each treatment.

Part (c): Which design is better and why?

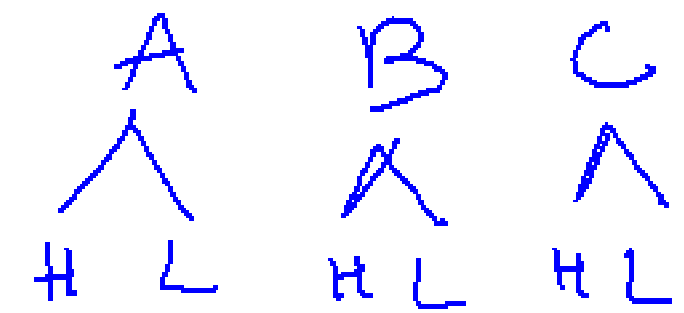
Matched pairs is the better design of the two. This is because it reduces the person-to-person variablility, thus reducing lurking variables that have to do with susceptibility (likelihood of) to mosquito bites (like skin type, smell of skin, etc.).

AP 2006 #5

Part (a): Treatments

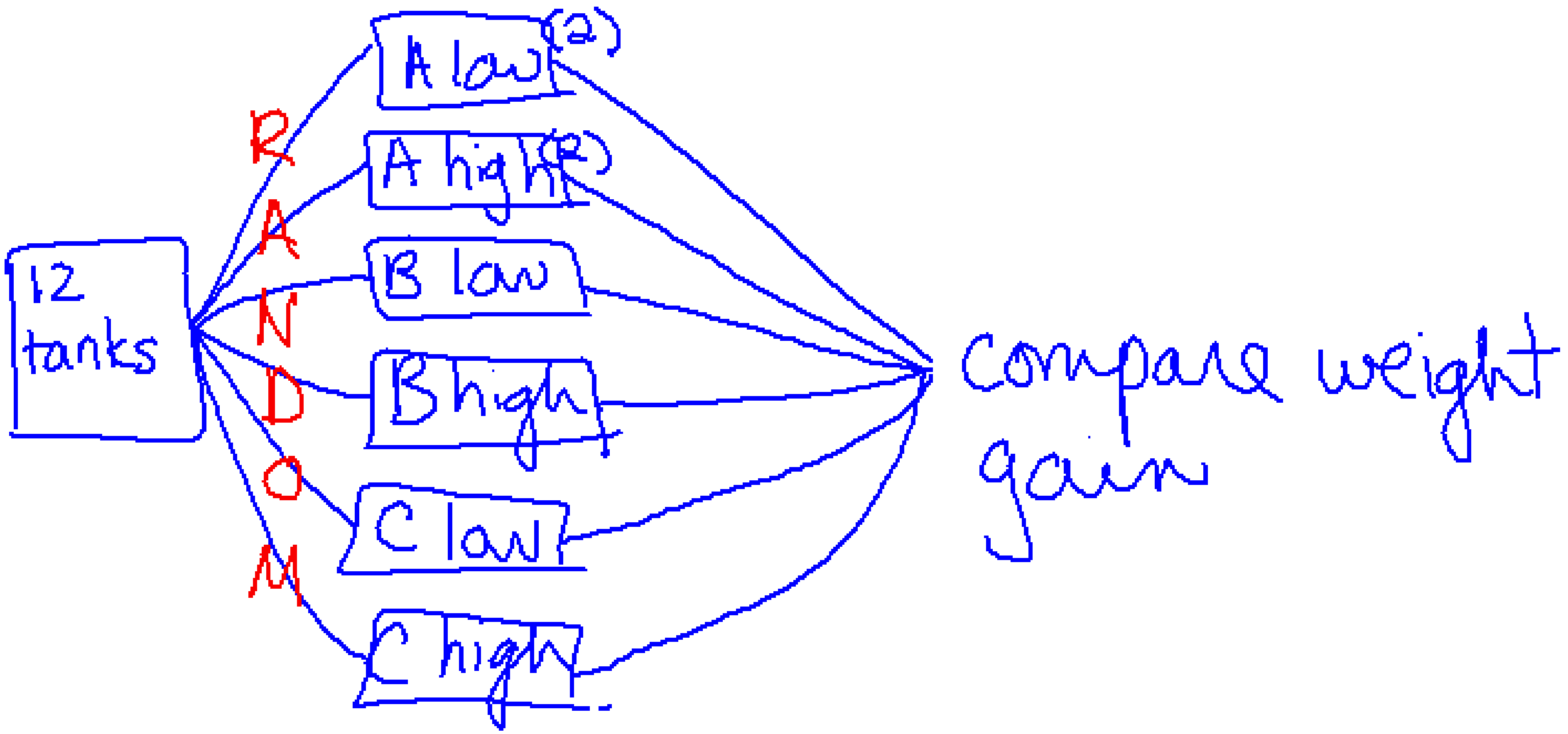
A-low B-low C-low

A-high B-high C-high



Part (b): CRD

Since there are 6 treatments, and we have 12 tanks, there will be 2 tanks randomly assigned per treatment.



Part (c): Why is it better to have only Tiger Shrimp?

Using only Tiger Shrimp will reduce the variation in the experimental units.

By eliminating the possible lurking variable of "type of shrimp" we will be able to better isolate the changes that are due to the the treatments. In other words, if all the exp. units are the same, then when we see changes in them we can assume they are from the treatments.

Part (d): Why is it NOT good to have only Tiger Shrimp?

Using only Tiger Shrimp limits us to what population we can conclude about.

If we only use Tiger Shrimp, then we can only make our conclusions about Tiger Shrimp, and not about all shrimp, because other types of shrimp may respond differently to these treatments.

AP 2006 #5 (form B)

Part (a):

response variable = DRAFT

treatments = STANDARD & NEW HITCH

exp. units = THE 2 PLOTS

Part (b):

Yes. The experimental units (the plots) were randomly and evenly assigned to the treatments (the new and std. hitch)

Part (c):

No. The experiment was only done on 2 experimental units total, and only one exp. unit was used for each treatment. The experiment was done only once, and not on a big sample size. We need to replicate our experiment many times and on many different exp. units.

Part (d):

Each treatment was used on only one plot of land, so we have no way of knowing if the responses we saw were due to the differences in the plot of land or due to the different hitches.

AP 2007 #2

Part (a):

A control group gives the researcher something to compare the treatment groups to. In this experiment, it would let them see the natural aging process of the dogs and they can then compare that to the aging process of the dogs with the medications. This would help them assess the effectiveness of the meds. * in context

Part (b):

* assign each dog a # from 1 to 300
* use software or table to generate numbers
* the first 100 numbers that come up will be assigned to glucosamine
* the next 100 #'s will be assigned to chondroitin
* the last 100 #'s will be assigned to placebo group

Part (c):

Pick whichever one (clinic or type of dog) has the greater effect on joint and hip health.

2007 FORM B #3

Part (a):

** Note: blocks are groups of exp. units with a similar characteristic.

I created the blocks below based on sun exposure. I believe that the windows in each block have the same amount of exposure to the sun.

Block 1: #1, 12 (north)
Block 2: #2, 3 (NE)
Block 3: #4, 5 (SE)
Block 4: #6, 7 (south)
Block 5: #8, 9 (SW)
Block 6: #10, 11 (NW)

Part (b):

For my blocks, I would assign one window in the block the number 0 and the other the number 1. Then I would use software (like randInt on the calculator) to generate a number (either 0 or 1). Whichever number came up would be assigned to treatment A and the other window would be assigned to treatment B.

This process would assure that half the windows in each block (and half the windows in the experiment) have treatment A and the other half have treatment B.

AP 2009 #3

Part (a):

First assign each of the students a number (1 thru 24). Then use software or the calculator to generate random numbers between 1 and 24. The first 12 different numbers that are generated should be assigned to Treatment 1 (the real dissection) and the rest are assigned to Treatment 2 (the simulated dissection)

OR

First block the students based on high, middle, and low pre-test scores. Then, within each block, assign the students a random number. Then using software, generate random numbers in the rang of those assigned to your block. The first half of the numbers that are generated will be assigned to Trt 1 and the rest in the block are assigned to Trt 2. Repeat in each of the 3 blocks.

Part (b):

If students are allowed to self-select, students of the same learning style might all select the same treatment, and thus the results of the post-test scores might not be due to the treatment, but instead due to the learning style of the student.

AP answer:

By not randomizing and allowing the students to self-select, there is a potential for changes to occur in the differences between pretest and posttest scores for a particular group because of the characteristics of students who choose a particular instructional method, not because of the instructional method itself. For example, suppose frog-loving students already know a lot about frog anatomy; one would therefore expect these students to be less likely to show a large change between the pretest and posttest scores. Suppose the frog-loving students tend to select the computer simulation method (perhaps because they do not like the notion of dissecting the frogs they love). The possible low change between pretest and posttest scores for the computer simulation group might then be attributed to the students' already knowing a lot about frog anatomy beforehand, not to the instructional method itself. The frog dissection group might see a larger change in scores because the students entering this group are those with the lower pretest scores (less prior knowledge) and who are thus more likely to show greater improvement between pretest and posttest scores.

AP 2009 FORM B #4

Part (a):

First, separate the birds into blocks comprised of their species (blackbirds, starlings, and geese). Then within the blackbirds, assign each blackbird a random number, starting at 1. Using software (or the table of random digits), generate random numbers in your assigned range. The first half of the distinct numbers that appear will assign those birds to Treatment 1. The other half are assigned to Treatment 2. Repeat the process for the block of starlings and also the geese.

Part (b):

Other than blocking (used to eliminate any lurking variables and make your experimental results more valid), we can increase the sample size in the experiment. This increase our possibility for showing statistically significant results

AP 2001 #4

Part (a):

Remember, blocks are supposed to be "groups of exp. units that have a characteristic in common."

Block A is better. In block A, the blocks are groups of exp. units that have something in common. The shaded block is filled with exp. units that are all near the forrest and get a lot of shade. The white block is filled with exp. units that are all further from the forrest and don't get a lot of shade.

Part (b):

Randomization of the trees within the blocks should reduce any possible bias due to confounding variables, like fertility, moisture, or the productiity of the two types of trees.